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# ALBERTA OIL AND GAS TENURE

1987
Edmonton

Alberta
ENERGY
Mineral Resources Division

DRN 7667603

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ENERGY
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# FOREWORD

This paper describes the development of the system used by the Province of Alberta under which the private sector acquires tenure to Crown oil and gas rights. It is written for oil and gas company personnel who hold, or wish to hold, rights for exploration and development, oil and gas administrators from outside Alberta, staff of the Alberta Department of Energy, and others interested in the principles and policies under which the department interacts with the oil and gas industry. It should be read in the context of the Mines and Minerals Act and associated Regulations, and the Information Letters published by the Department of Energy from time to time. The period covered is from 1930, when the province assumed control of its energy and other resources, until 1987.

The Alberta Department of Energy is responsible for administering the legislation which governs the ownership and administration of Alberta's oil, gas, oil sands, coal, and metallic and other mineral resources. The department's major objective is to manage these non-renewable resources to ensure their efficient development for the greatest possible benefit to the province and its people. The responsibilities of the Mineral Resources Division have been integral to what is now the Energy Department since 1930. The division is responsible for all aspects of Crown mineral tenure policy other than those related to the payment of royalty. More than 55 000 active mineral rights tenure agreements, 90 per cent of which relate to oil and gas, are managed.

The division interacts frequently with industry to ensure Alberta's tenure legislation and policies evolve with the changing needs of government and industry.

The major units in the division and their relationship to those other components of the department and other government agencies most involved in Crown oil and gas management, or in supporting the division, are shown in an organization chart (Figure 1).

The information contained in this publication is of an explanatory nature, current to 1987. The applicable legislation and directives issued from time to time remain the authority for any administrative and regulatory procedure.

Alberta Oil and Gas Tenure is the result of co-operative efforts between former and present staff of the Mineral Resources Division.

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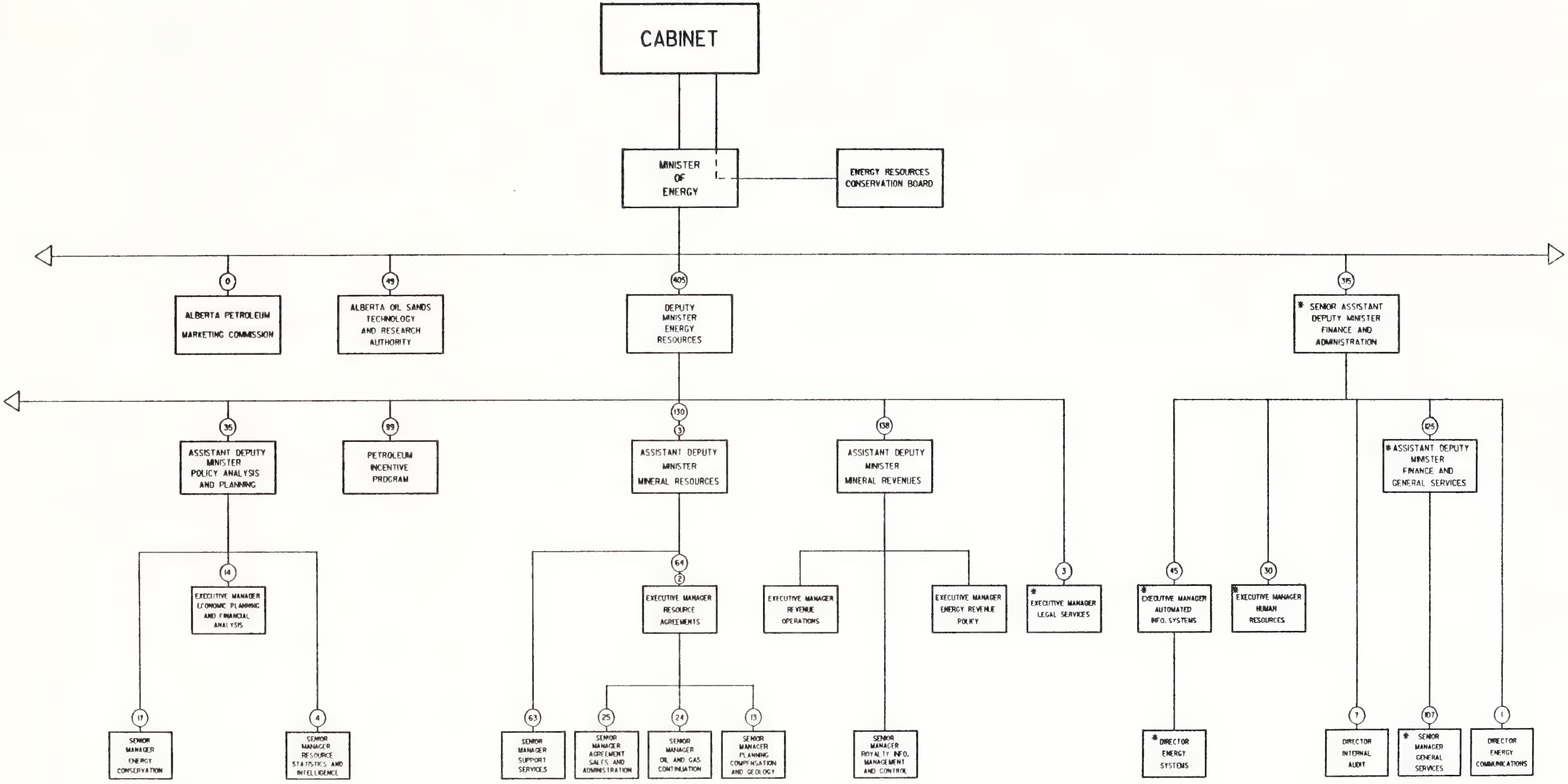
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DIRECTOR INTERNAL AUDIT
107
* SENIOR MANAGER GENERAL SERVICES
1
DIRECTOR ENERGY COMMUNICATIONS

* ALSO SERVES FORESTRY, LANDS AND WILDLIFE

Fig. 1. ALBERTA DEPARTMENT OF ENERGY. ORGANIZATIONAL COMPONENTS INVOLVED IN OIL AND GAS MANAGEMENT

## 1. INTRODUCTION

The mineral rights in approximately 81 per cent of the province's 66 million hectares are held by the Alberta Crown and are administered by the Government of Alberta. The remaining mineral rights are held by the federal Crown within the national parks and Indian reserves and by the Hudson's Bay Company, the national railway companies and the original homesteaders through rights granted by the federal Crown before 1887.

Orderly management and development of the province's oil, gas and other mineral rights are essential to the viability of the non-renewable resource industries and the provincial economy. It is important that an acceptable profit be realized by industry and by the people of Alberta. In the development of non-renewable resources, the renewable resource base cannot be jeopardized. Complementary policies governing the management of water resources are administered by the Department of Environment, and of other renewable natural resources by the Department of Forestry, Lands and Wildlife.

Alberta's oil and gas tenure legislation has progressed through four major stages. The first agreements were small, prospect-staking parcels of 768 hectares (ha). The second stage saw the creation of large (up to 40 000 ha) reservations issued where little or no drilling had taken place. The main tenure feature of a reservation was that half the area had to be returned to the Crown.

The third major stage stimulated exploration for natural gas that was marginally economic to produce. Upon the discovery of gas and the completion of a continuous drilling program to determine the extent of the reservoir, larger blocks of rights could be held than were possible with oil.

The fourth (current) stage saw the return to the Crown of the deeper, non-productive and unproven zones below oil- and gas-producing zones, and the issuance of shorter-term exploration agreements and leases.

Three key principles have remained constant, however, throughout the evolution of the tenure system.

First, for methods of exploration other than well drilling, no tenure agreement conveying rights is necessary. Typically, this means geophysical work (including drilling of shot holes) may be performed by a number of companies on undisposed and disposed Crown oil and gas rights, subject only to access permission from the surface owner and non-exclusive operating authority from the Department of Forestry,Lands and Wildlife.

Second, once discovered, there is no obligation for oil and gas to be produced.

Third, tenure is granted beyond the term of a lease on the basis of the lease's capability to produce in paying quantity. Actual production is not necessary. The term, "in paying quantity", although imprecise, has stood the test of time even though sales prices and producer net-backs have varied.

The objective has always been to ensure the maintenance of an attractive investment climate for the petroleum industry, while protecting a depleting resource.

## 2. PAST OIL AND GAS RIGHTS TENURE SYSTEMS

Alberta's mineral rights were owned by the federal Crown and administered by the Government of Canada's Department of the Interior before transfer to the Alberta Crown on October 30, 1930.

At that time, the statutes and regulations of the Government of Canada pertaining to the natural resources in the province were continued by the Administration of Natural Resources (Temporary) Act.This act was administered by Alberta's Department of Lands and Mines until June 18, 1931, when the Provincial Lands Act and associated regulations came into force. These regulations were almost identical to the early federal regulations.

The legislation and land tenure systems in place before the current system was introduced in 1976, are described below in chronological order. In 1978, the Department of Energy and Natural Resources adopted metric units for all petroleum administrative purposes. A section, quarter section and legal subdivision of land were deemed to contain 256 ha, 64 ha and 16 ha respectively. A section is a unit of the Alberta survey system and is, for all practical purposes, one square mile. Metric units are used throughout this report, although most dimensions quoted have their origin in the imperial system.

### 2.1 Prospecting Permits and Petroleum and Natural Gas Leases

In 1931, the regulations governing Permits to Prospect for Petroleum and Natural Gas and the Petroleum and Natural Gas Regulations under the Provincial Lands Act were announced. Prospecting permits were granted by the Department of Lands and Mines for one year on a maximum area of 768 ha. The permittee had to conduct core drilling on the permit to earn the entire area in lease. Petroleum and natural gas leases with a 21-year term were granted to a maximum of 768 ha and were renewable for a further 21 years if they were capable of producing petroleum or natural gas in commercial quantities.

Once a lease was granted, a lessee had to have "machinery and equipment suitable for carrying on drilling operations" on site within one year. The term "prospecting" was used to denote exploration as it is known today. The lessee was also required to begin drilling within 15 months. The regulations allowed the grouping of leases for operating purposes so that exploration work, such as drilling, could be conducted on one or more of the grouped leases without the need to drill within the individual boundaries. The maximum area in a group was 8 000 ha. Rentals, established in 1920 at the rate of $1.25/ha for the first year and $2.50/ha for subsequent years, did not change.

By 1936, there were great advancements in geological knowledge and geophysical techniques for locating potential oil- and gas-bearing geological structures. It became apparent that prospecting permit areas were too small to provide a development program on their own.The regulations governing the issuance of prospecting permits were amended to allow the permit size to be at the discretion of the department.

In 1936, the Petroleum and Natural Gas Regulations were amended to increase the maximum size of allowed lease groupings from 8 000 to 20 000 ha. The lessee could also use the drilling expenses as a credit toward satisfying the lease rentals up to and including the 12th year of the lease.

In 1941, new Petroleum and Natural Gas Lease Regulations governing the disposition of oil and gas rights were established, increasing the area obtainable under lease from 768 ha to 3 840 ha.

### 2.2 Petroleum and Natural Gas Reservations

The prospecting permit regulations were rescinded in 1937 and replaced by regulations governing a new form of disposition called the Petroleum and Natural Gas Reservation. Up to 40 000 ha could be included in a reservation, allowing exploration over large areas where little was known.

Reservations were available through bidding. The area available was advertised by a notice posted in the Mining Recorder's Office and a sale date was specified. All interested parties submitted a sealed bid together with the full amount of the tendering bid. When no bid was received, the reservation became available the day following the sale on a first-come, first-served basis for a minimum filing fee.

The principle of grouping was carried over from the prospecting permit. Where a company held several reservations, a more beneficial exploration effort could be obtained by concentrating exploration on one or more of the reservations, rather than simultaneously. A maximum of 80 000 ha could be grouped.

A highly significant change introduced at this time was that 50 per cent of a reservation's area reverted to the Alberta Crown at expiration. This reverted area was called Crown Reserve. When a reservation holder requested a lease selection, rules on the area and configuration applied. Individual leases selected out of reservations could not exceed 4.8 by 4.8 km or 3.2 by 6.4 km. The blocks selected had to corner or be separated by at least a 1.6 km corridor (Figure 2).Only 50 per cent of a reservation's area in each "township" could be selected as lease. Township is a term employed in the Alberta survey system and refers either to a six-mile square comprising 36 sections,as it does here, or to individual six-mile-wide strips running east-west across the province (Township 14, Township 67, etc., with Township 1 immediately adjoining 49 degrees north latitude on the southern boundary of the province). The acreage between the selected lease blocks was designated a Crown Reserve.

The size and pattern of the lease blocks were designed to ensure that a company discovering a hydrocarbon-bearing pool would have to return part of the pool to the Crown. Subsequently, the reverted area was made available for further development on a competitive basis.

An oil discovery immediately obliged the reservation holder to make a lease selection around the discovery, with half the area reverting to the Crown. Once the reservation holder selected his lease area and the Crown Reserve had been determined, those lands were withdrawn from the reservation. The balance of the reservation continued to allow further exploration.

The Petroleum and Natural Gas Reservation, established in the 1937 regulations, remained in effect until December 1982, when the last reservation issued was cancelled in the department's records.

### 2.3 Provincial Reserves

It was recognized in 1941 that a higher degree of control over the disposition of mineral rights was required in a number of selected areas. Fifteen of these areas were established by legislation and were withdrawn from disposition under the normal lease and reservation regulations.

In 1944, regulations were enacted governing the disposition of Crown Reserves; that is, the previously established Provincial Reserves and Crown Reserves selected from petroleum and natural gas reservations. A significant feature of

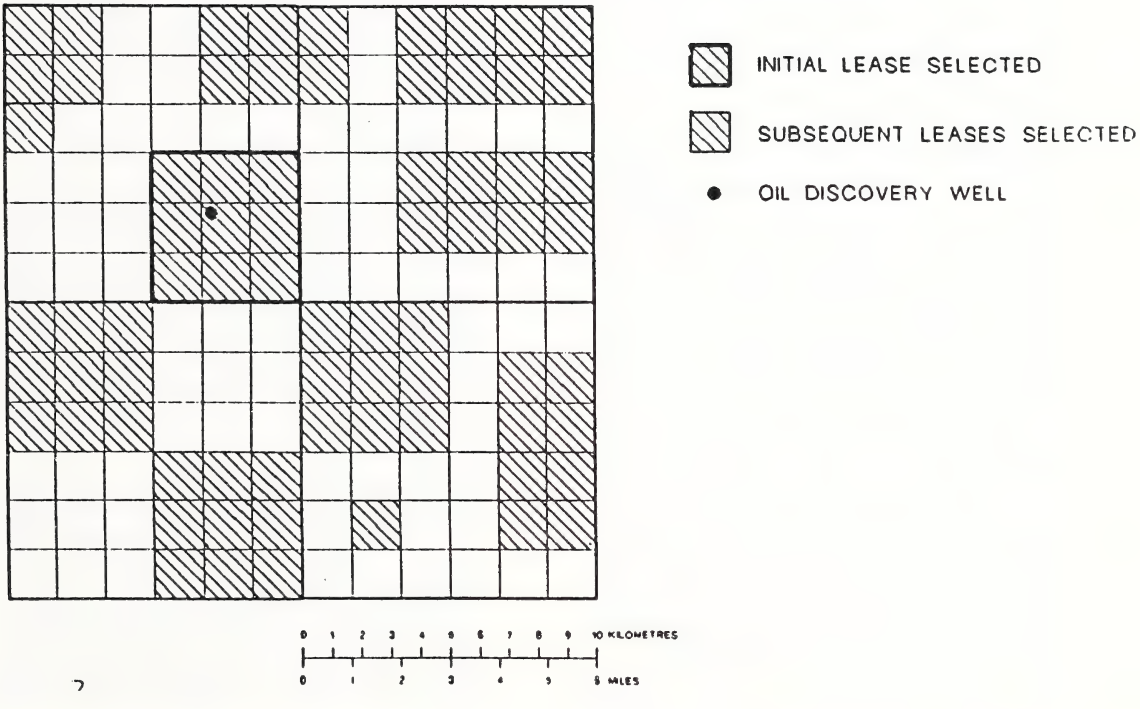


FIG. 2. LEASE SELECTION FROM A PETROLEUM AND NATURAL GAS RESERVATION.

these regulations was that all the area within the selected Provincial Reserves was declared Crown Reserve. This is in contrast to 50 per cent of the area granted by the Crown in reservations outside these reserves. As a result, the Crown reserved the right to reject any bids on petroleum and natural gas reservations within the Provincial Reserves (as on other Crown Reserves), and the practice of filing the day following a sale was not permitted. These reservations were disposed at quarterly Crown Reserve Sales and were also subject to 50 per cent surrender at the time of lease selection.

## 2.4 Mines and Minerals Act

The Mines and Minerals Act came into effect April 1, 1949, and applied to all Alberta Crown petroleum and natural gas rights formerly governed by the Provincial Lands Act.

Simultaneously, the Alberta Department of Lands and Mines was succeeded by two departments: the Department of Mines and Minerals,responsible for the administration of non-renewable resources, and the Department of Lands and Forests with similar responsibilities for renewable resources.

## 2.5 Natural Gas Licences and Leases

The Natural Gas Licence Regulations, introduced in 1951, created the natural gas licence agreement. The natural gas licence granted the petroleum and natural gas reservation holder, upon discovery of natural gas, the option to earn up to 100 per cent of the natural gas rights underlying his reservation.

The area selected for a natural gas licence had to be contiguous(all lands had to be in actual contact and no corridors or space could be left between selected lands); the lease block and Crown reserve corridor requirement were waived, but the maximum size of the licence could not exceed 36 sections.

During the term of the natural gas licence, renewable for five six-month periods, the licensee had to begin drilling within three months of the issuance of the licence. The licences were stratigraphically zone-specific. The licence's zone was designated through a petrophysical log of the discovery well. If further drilling discovered natural gas in paying quantities in a zone other than that contained in the licence, the discovered zone could be included in the original licence.

The natural gas lease, introduced in 1952, allowed holders of natural gas licences to earn 21-year natural gas leases after a continuous drilling program. This lease-earning drilling program was intended to determine the area encompassed by the natural gas pool in a licence. The natural gas lease was confined to the zone(s) in which natural gas had been proven in paying quantity. There was no set requirement for lease configuration, but only complete gas spacing units could be selected.

Holders of petroleum and natural gas reservations, who earned natural gas licences, had to surrender those particular natural gas zones from the reservation to include them in the natural gas lease(s)granted following the licence. The reservation holder could select petroleum and natural gas leases from any of the lands contained in the reservation if they met the required lease selection configuration(Section 2.2). The selected petroleum and natural gas leases excluded any natural gas rights previously selected as natural gas licences or leases. Holders of natural gas licences were able, at any time, to surrender portions of the licence and return those natural gas rights to the reservation or to the leases selected out of the reservation.

With the introduction of natural gas agreements, the department and industry developed familiarity with the stratigraphic separation of leases and the separation of petroleum from natural gas within those strata. This experience paved the way for the deeper rights reversion features of the 1976 legislation.

## 2.6 Crown Reserve Natural Gas Licences

By 1952, it became apparent that certain areas of the province had greater potential for natural gas production than crude oil. It also became obvious that there was a need to stimulate long-range exploration for natural gas, that was still considered marginally economical. In natural gas-prone areas, the natural gas rights within Crown Reserves were made available to the petroleum industry for competitive bid as Crown reserve natural gas licences. The licences granted natural gas rights in all zones.

The tenure conditions for the Crown reserve natural gas licence were identical to those for the normal natural gas licence selected from reservations. The maximum licence size was 36 sections and the term was 2-1/2 years. Generally, the licensee had to begin drilling within six months of the licence date. Holders of these licences could acquire 21-year natural gas leases based on the number and depth of productive gas wells drilled into the licence.

## 2.7 Crown Reserve Drilling Reservations

Crown reserve drilling reservations were introduced in 1954 to stimulate drilling to specific targets believed to have large amounts of crude oil. Crown reserve rights were available upon request. The requesting party had to specify the zone to which he was prepared to drill to earn petroleum and natural gas leases. The rights were then advertised through a sale notice that specified the number of sections that could be earned as lease after drilling to the zone. The highest bidder was awarded the rights. The attention of all prospective bidders was, therefore, focused on specific geological plays.

The size of the Crown reserve drilling reservation, and the number of sections that could be selected as lease, increased with the depth of the prospective zone. If natural gas was found, the natural gas licence option, that allowed 100 per cent lease coverage of the gas-bearing zone(s) to a maximum of 36 sections, was available. The natural gas licence option was available only if the reservation's specific target zone was reached.

The reservation holder had to begin continuous drilling within one year of the reservation date. Drilling had to be carried out until oil production was discovered in paying quantities, with intervals of not more than three months between the abandonment of one well and commencement of the next. If the target zone were penetrated, 25 percent of the drilling reservation area could be converted to petroleum and natural gas lease. This form of drilling reservation could be renewed every six months, for a maximum of three years, from the date of issuance. The entire cost of drilling performed on the drilling reservation could be applied as a dollar credit toward the first year's rentals on the leases earned.

### 2.8 Petroleum and Natural Gas Permits

In 1962, the focus of exploration activity shifted to the central basin area of the province in pursuit of deeper multi-zone prospects.This resulted in a decline of activity in southeastern Alberta. To maintain a reasonable level of interest in the area between the fourth and fifth meridians from Townships 1 to 64 inclusive, a new form of disposition, the petroleum and natural gas permit, was created. Crown Reserves were abolished within this area.

The main feature of the petroleum and natural gas permit was that upon completion of a well, the permittee could convert the entire area to petroleum and natural gas lease. Half the drilling costs incurred before conversion were applicable against the first year's lease rentals.

### 2.9 Significant Historical Events between 1970 and 1976

During the first half of the 1970s, a number of significant international, national and provincial events took place which had dramatic repercussions on the province's oil and gas rights tenure system. These events included:

1970 Middle Eastern countries, that produced most of the world's crude oil, wanted greater participation in major oil company operations in their countries.

1971 Canadian exploration by the major companies shifted from Alberta to the northern frontier. The Alberta government recognized the need to stimulate petroleum activity in Alberta.

1972 Public hearings on methods of stimulating activity levels were held with the petroleum industry. The government recognized the need for greater accessibility to oil and gas rights by the active smaller companies and thus began a review of the total mineral rights tenure system. The Alberta government also introduced an exploratory drilling incentive system to encourage the search for new oil and gas reserves.

1973 Major price increases in crude oil were made by the Organization of Petroleum Exporting Countries. The Alberta government increased royalties on crude oil. The petroleum industry's preoccupation with pricing and royalty matters resulted in it temporarily discontinuing oil and gas rights tenure system discussions with the Alberta government.

1974 The Alberta Petroleum Marketing Commission was established to supersede price control by a small number of major transnational oil companies. Further Crown royalty increases occurred and changes to federal income tax legislation ended the deduction of provincial royalties in calculating federal tax.

1975 Independent oil and gas companies expressed concern that the major companies were holding large lease blocks by production from shallow stratigraphic intervals and were delaying the development of deeper geological zones. This concern was also shared by the then Alberta Department of Energy and Natural Resources. The geophysical incentive system was introduced to stimulate geophysical activity.

## 3. PRESENT OIL AND GAS RIGHTS TENURE SYSTEM

Petroleum and natural gas reservations permits and leases, natural gas licences and leases, Crown reserve natural gas licences and Crown reserve drilling reservations were in effect in the early 1970s.

In 1976, major amendments were made to the oil and gas tenure system because of the following concerns.

1. The need to stimulate drilling activity.
2. The need to encourage the drilling and development of deeper horizons below those already in production.
3. The decreasing possibility of discovering new oil pools that would exceed the areal extent of a lease block.
4. The need to rationalize and reduce the types of agreements being issued.

Following a year of discussion with interested industry associations and individuals, these concerns resulted in major amendments to the Mines and Minerals Act and Regulations:

1. Petroleum and natural gas permits, petroleum and natural gas reservations, Crown reserve natural gas licences, and Crown reserve drilling reservations were no longer granted.
2. Two new forms of agreements were introduced: the petroleum and natural gas licence and the shorter-term, five-year petroleum and natural gas lease. To acquire petroleum and natural gas leases from the licence, a lease-earning well must be drilled on the licence to evaluate petroleum or natural gas, the rights to which are granted by the licence. The petroleum and natural gas lease may be continued beyond its primary term if the lessee can demonstrate that the lease is capable of producing petroleum or natural gas.
3. Exploration Agreements in force before 1976 were allowed to continue until their term expired or the agreement holder requested cancellation.
4. Rights below the deepest productive zone in a lease reverted to the Crown upon expiry of the initial lease term (deeper rights reversion).
5. Except in those minor instances where a well spacing unit is partly owned by the Alberta Crown, the acquisition of Alberta Crown undisposed petroleum and natural gas rights could be accomplished only through public tendering.
6. Petroleum and natural gas rights would be offered for public tender only if requested by industry.

### 3.1 Acquisition of Oil and Gas Rights

The Alberta Crown always retains title to its oil and gas. In Alberta, rights to oil and gas are granted to the private sector for exploration and development by way of petroleum and natural gas agreements. [1]* An individual or corporation may acquire a petroleum and natural gas agreement from the Alberta Crown by application or sale by public tender. The agreement conveys the right to drill for and produce the oil and gas conveyed by the agreement. The department issues two types of petroleum and natural gas agreements: a licence and a lease. Both types may be acquired by public tender sale. In certain limited circumstances, leases may also be acquired by direct purchase.

The minister may issue, by public sale, a petroleum and natural gas licence or lease of undisposed Crown petroleum and natural gas rights.

*Numbers in brackets refer to the regulations currently in effect as cited in Section 5.

### 3.1.1 Acquisition by Direct Purchase

In certain parts of the province, the Crown owns only a portion of the oil and gas rights in a quarter section and the balance is owned by others (Figure 3). This division of ownership occurs where rivers and lake areas were excluded from the freehold title. A lease of these undisposed Crown petroleum and natural gas rights can be requested without tendering.

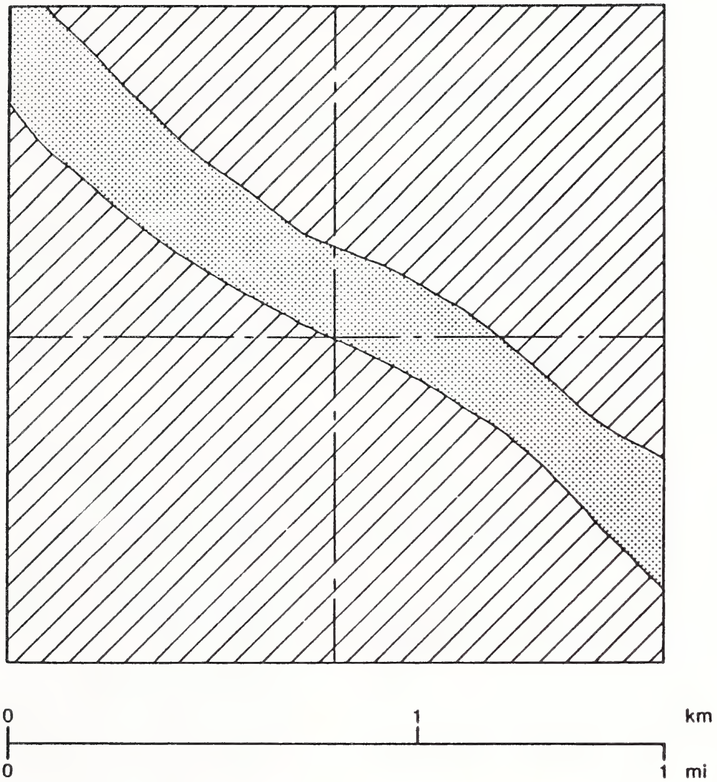
An application for a petroleum and natural gas lease is accepted only from individuals or corporations controlling the freehold portion within a quarter section, or in a drilling spacing unit that is less than a quarter section. To certify that the applicant controls the petroleum and natural gas rights in the freehold portion of the spacing unit, a completed statutory declaration to that effect must be attached to the application. The purchase price for the lease is determined by one of the following:

(a) average bonuses received at public offerings during the past year for petroleum and natural gas agreements (conveying similar rights) within 3.2 km of the application;

(b) where no agreements have been sold within 3.2 km of the application, the purchase price is based on the average bonus received at public offerings during the past year within the area (Plains, Northern or Foothills) in which the application is located;

(c) where it is obvious to the department that above methods (a) or (b) fail to adequately recognize a reasonable value for reserves beneath the lease applied for, the department offers a purchase price based on an assessment of those reserves.

The applicant is given 30 days to accept the offer. Upon receipt of the purchase price, fee and rental, the lease is issued, with the term beginning



Legend

░ Crown owned oil and gas rights

▨ Privately owned oil and gas rights

FIG. 3. CROWN OWNED OIL AND GAS RIGHTS UNDER A RIVER CAN BE ACQUIRED BY PRIVATE SALE BY THE FREEHOLD OWNER OR LESSEE.

on the date the remittance is received in the department. If the offer is rejected, the applicant may request that the fractional parcel be included in the next available public offering, and his application is cancelled.

### 3.1.2 Sale by Public Tender

An individual or corporation wishing to acquire a petroleum and natural gas disposition from the Alberta Crown may request that the department advertise the specific rights at a sale (a posting request).

(a) Initial priority is given to a posting where the requestor is drilling a well to evaluate the posted parcel.

(b) Subsequent priority is given to requests in the order received within the four-week posting period allotted for the requested sale. (Sales schedules and attendant posting periods are published annually and distributed to industry.)

(c) If (a) or (b) operates to prevent a lower priority request from being posted in the type, size and configuration requested, the requestor is contacted and an alternate posting accommodated.

(d) If lower priority requests cannot be accommodated in a given sale because of an excessive total number of requested parcels, the excess parcels are carried forward to following sales.

(e) Crown rights to be included in one agreement must be contiguous except where intervening freehold and leased Crown rights exist, provided the rights applied for are not separated by more than 2 km.

(f) The maximum size of a licence posting is that prescribed by regulation.

(g) The maximum size of a lease posting is typically that prescribed for a licence in the same area.

(h) The minimum size for an agreement is the spacing unit for petroleum in the location.

(i) As a general guide, the department posts a maximum of eight agreements for any one company or its agent in any one geological play at any one sale.

#### Shallow Agreement Posting

Subject to the priorities listed above, where all petroleum and natural gas rights are undisposed, the department accepts posting requests for shallow petroleum and natural gas rights. The deeper rights in the same area as the shallow rights request are not advertised unless a specific request for all rights is subsequently received within the same posting period (see (b) above). If such an event occurs, the rights are advertised as two separate agreements, one of shallower rights and one of deeper rights.

#### Advance Booking

Subject to the priorities listed above, the department accepts advance bookings for the posting of petroleum and natural gas rights when the requestor wishes to acquire an agreement timed to a well deeper than 3 000 m that will evaluate the rights requested. An advance booking is initially advertised by way of a Notice of Pending Public Offering. This notice is published on the date shown in the annual public offering schedule for the posting period in which the request was received. The time between the publication of the notice and the sale date depends on the depth of the committed well. The advance booking time for a 3 000 m well is 16 weeks. The time may be extended by one-week periods for each additional 50 m in depth. The booking is subsequently re-published in the Notice of Public Offering eight weeks before the sale date.

The posted rights are presented to the multi-agency Crown Mineral Disposition Review Committee (CMDRC) for its review regarding any surface environmental concerns. The posted disposition may be subject to an addendum if there are major surface concerns. The addendum provides information on identified lands with surface access restrictions, and appears in the appendix of a sale notice. These concerns include, for example, the preservation of fish and wildlife habitats, recreational areas and ecological reserves. As a result of these concerns, access to certain lands may be restricted to certain times of the year or may not be permitted at all. For example, the Prime Protection Zone and Critical Wildlife Zone identified within the Policy for Resource Management of the Eastern Slopes (Revised 1985) (the Foothills area) prohibit and restrict access respectively. Once the mineral rights are reviewed by the CMDRC and approved by the department, a Public Offering of Petroleum and Natural Gas Rights sale notice is issued eight weeks before the sale date (Figure 4).

The sale notice specifies the terms and conditions of the sale together with the time, date and place that sealed offers for the advertised disposition will be accepted. Interested persons must submit their tender in a sealed envelope before the closing time indicated on the sale notice. The offer tendered must be cash, bank draft or certified cheque to satisfy the bonus, fee and rental for the disposition.

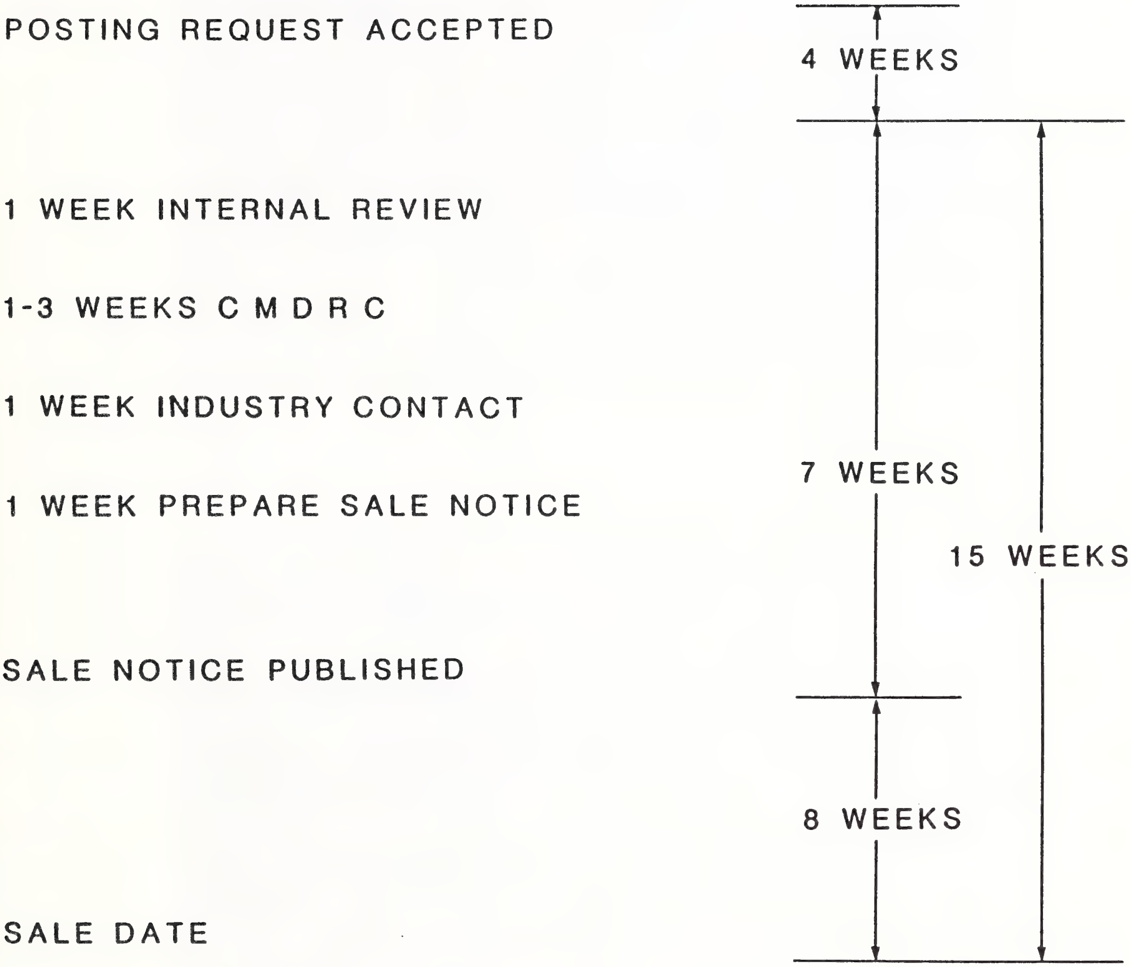
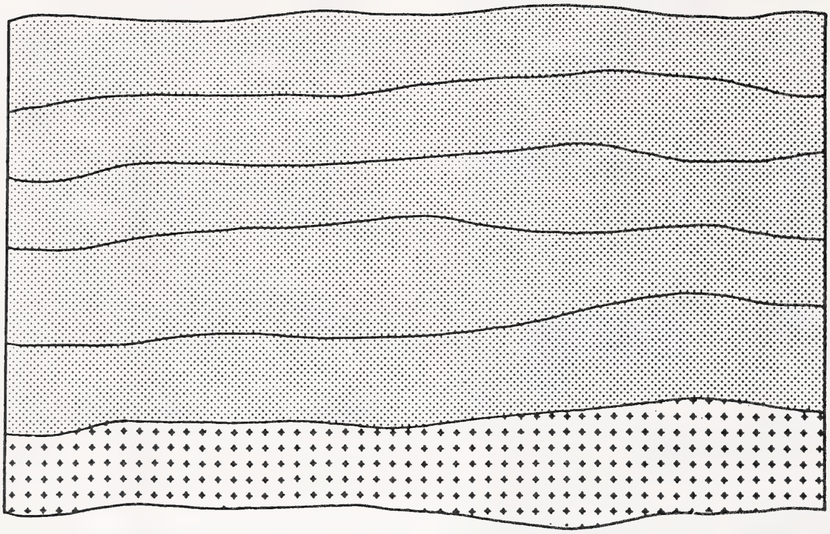
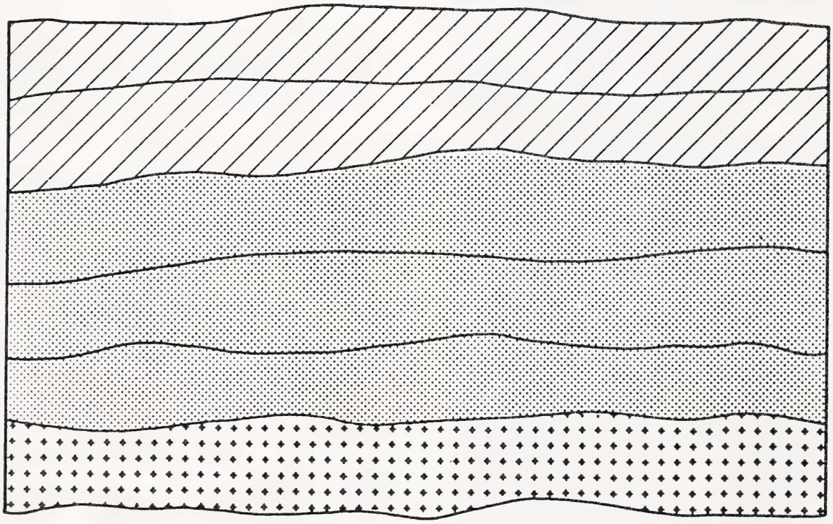


FIG. 4. EXAMPLE OF NORMAL POSTING CYCLE.



ALL ZONES



DEEPER ZONES

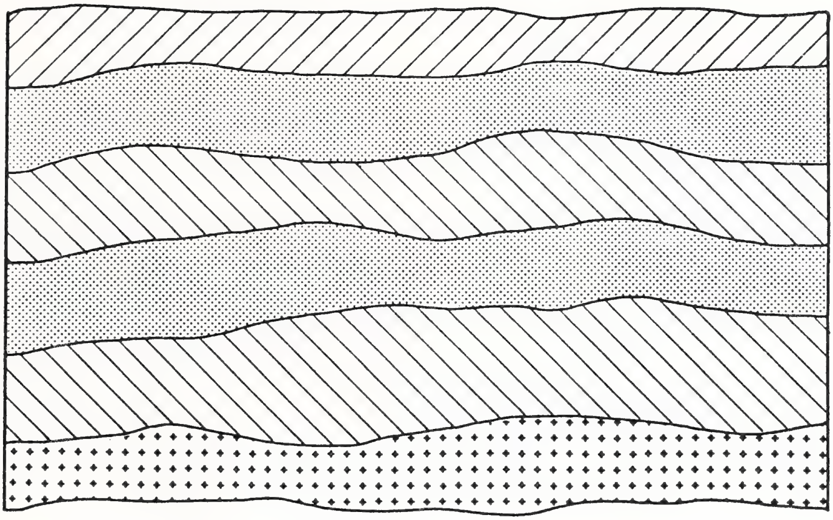
Legend

▨ Leased zone

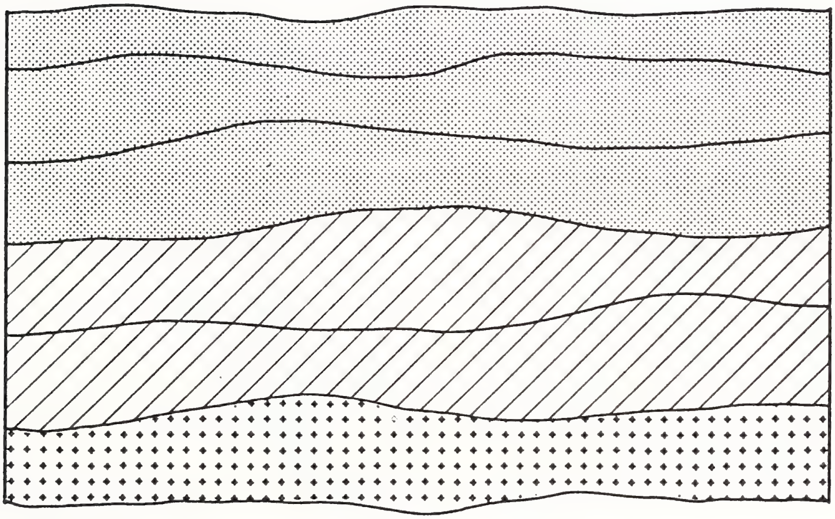
░ Zone available for sale

⁘ Basement

FIG. 5. TWO CATEGORIES OF ZONES AVAILABLE FOR DISPOSITION.



INDIVIDUAL ZONES



SHALLOW ZONES

Legend

▨ Leased zone

▧ Natural gas leased zone

░ Zone available for sale

⁙ Basement

FIG. 6. OTHER CATEGORIES OF ZONES AVAILABLE FOR DISPOSITION.11

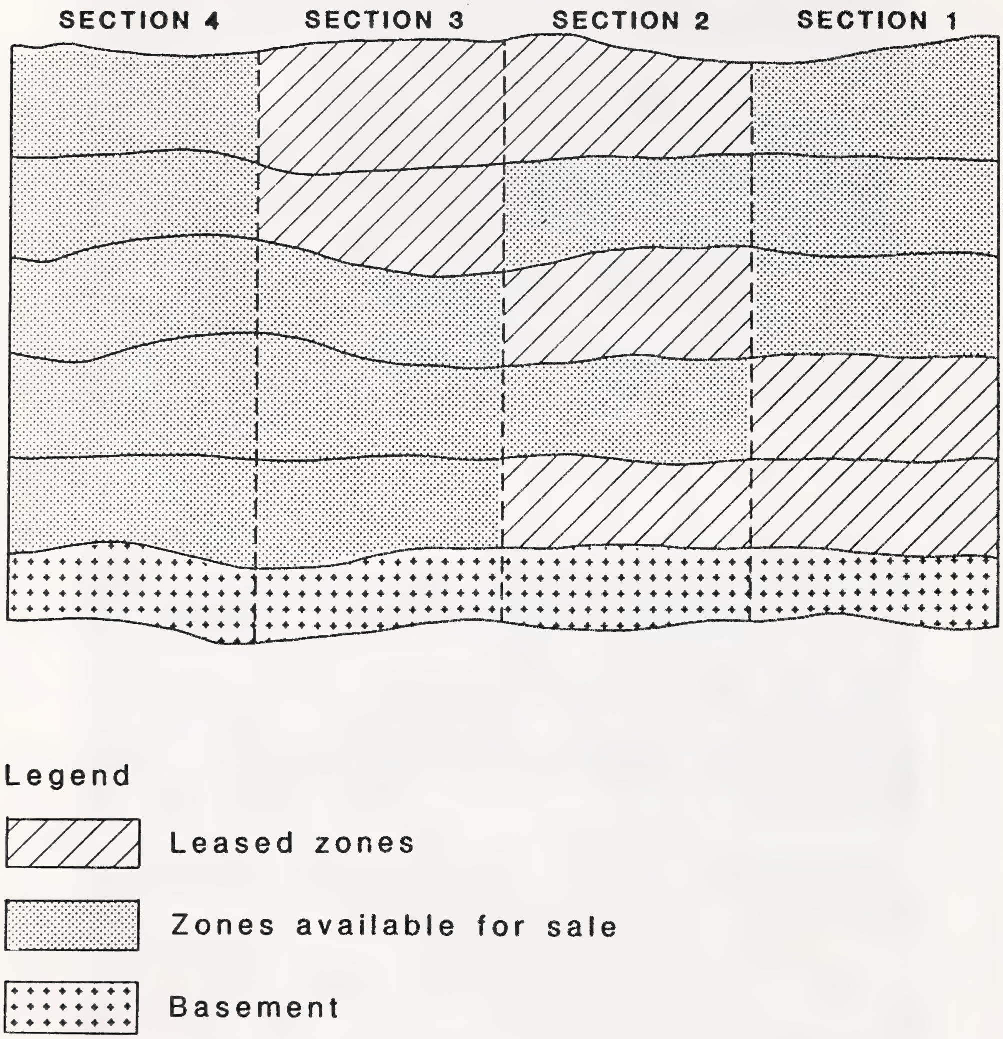
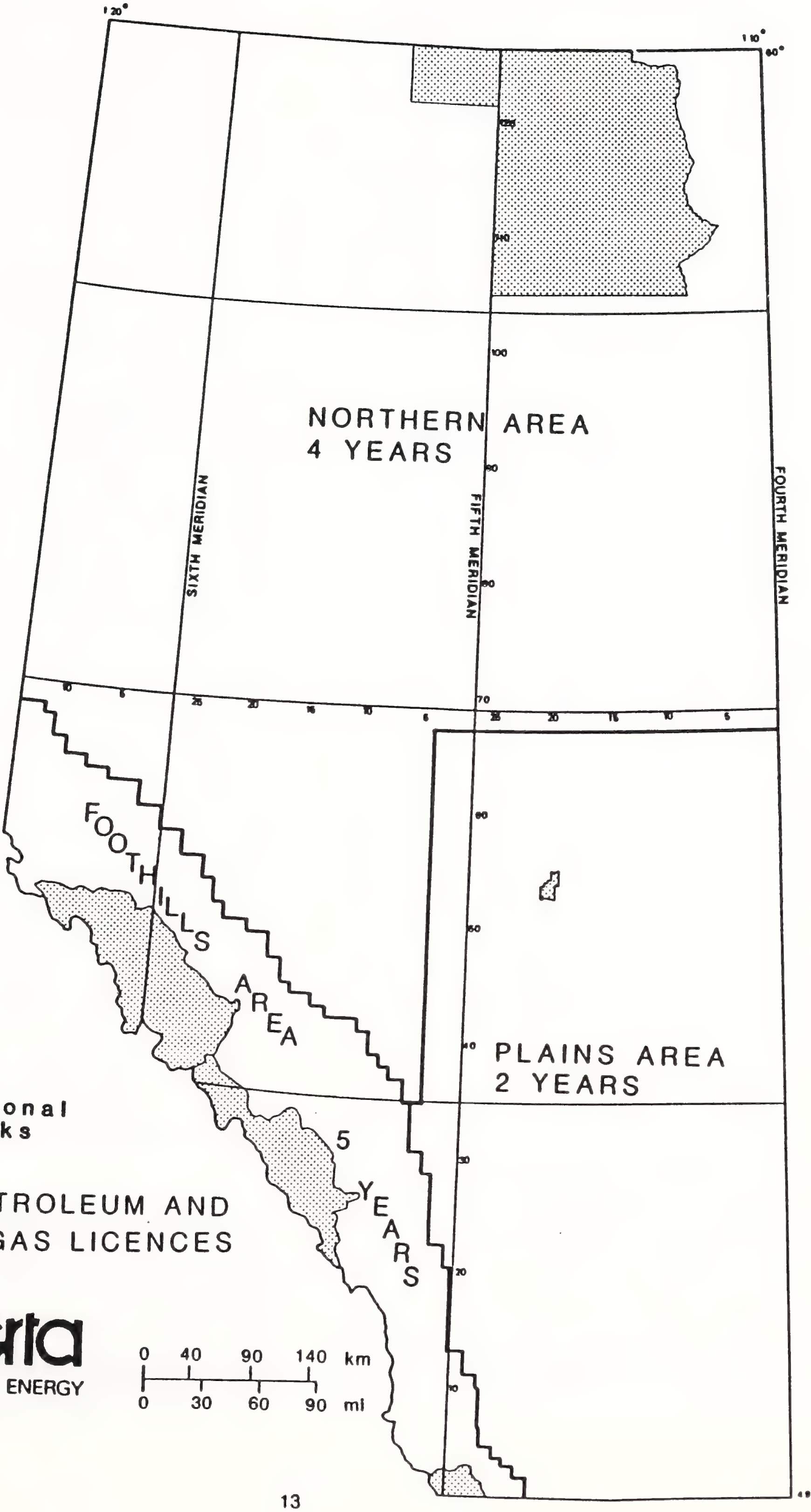


FIG. 7. COMBINATION OF ZONES AVAILABLE IN ONE AGREEMENT.



**Legend**

▨ **National Parks**

FIG. 8. PETROLEUM AND NATURAL GAS LICENCES AREA MAP.

Alberta
ENERGY

The day following the sale, the name of each successful purchaser and the bonus paid are released. The department releases only information pertaining to the highest, winning bid for each parcel. The department generally holds 25 public sales a year, with an average of approximately 200 parcels per sale. The schedule of sale dates is published a year in advance.

As a result of Alberta's past mineral tenure systems, the stratigraphic intervals or zones available for disposition fall into four categories: all zones, deeper zones, individual zone(s) and shallow zones. These are depicted in Figures 5 and 6. It is important to note that any single disposition issued may consist of more than one zone category. A cross-section schematic representing all four categories of zones is illustrated in Figure 7.

### 3.2 Petroleum and Natural Gas Licences

Petroleum and natural gas licences are intended for those oil and gas operators who believe the five-year lease agreement does not provide sufficient time for them to prove the productivity of the rights they request. The term of a licence provides for equivalent on-the-ground exploration and development time in each area of the province by taking into account climatic conditions, terrain, topography and access. To neutralize these natural restrictions to exploration and development, the term of a licence is two years in the Plains area, four years in the Northern area and five years in the Foothills area (Figure 8).

[3] The licence grants the right to drill for and produce petroleum and natural gas. An offer for a petroleum and natural gas licence at a public sale must be accompanied by the full amount of the bonus, a $500 fee and rental at a rate of $2.50/ha for the first year. An offer of less than $1.25/ha is not accepted.

[2] The Petroleum and Natural Gas Agreements Regulation stipulates that the maximum area that may be acquired in a petroleum and natural gas licence is 29 sections in the Plains, 32 sections in the Northern area and 36 sections in the Foothills.

[4] Once a licensee has drilled on the licence or grouped pair of licences to evaluate a prospective oil- or gas-bearing formation that is included in the licence rights, he is entitled to a five-year petroleum and natural gas lease. Each lease-earning well entitles the licensee to a specific number of sections calculated in proportion to the total number of metres drilled by one or more wells (Figure 9). Lease selection must occur before the licence expires.

The petroleum and natural gas rights selected as lease must contain whole sections or the whole of any fractional section contained in the licence. Where a lease-earning well can produce oil, the location[1] of the lease need not consist of whole sections but may be made up of oil well drilling spacing units.[2]

To understand lease entitlement better, consider the following case: A licensee drills a 1 500 m well in the Northern area. Regardless of his drilling results, he is entitled to lease nine sections (Figure 10).

Where a lease-earning well is drilled to a minimum depth as shown in column 1 in the following table (the depth hereinafter called the "column 1 depth"), but not below the next succeeding depth shown in column 1, the number of sections for which the licensee may apply as locations under petroleum and natural gas leases is:

(a) the number of sections shown in the column for the appropriate area opposite the column 1 depth; plus

(b) the number of sections or parts of sections calculated by multiplying the difference between the column 1 depth and the total drilled depth of the well by the incremental factor in column 5 opposite the column 1 depth.

To encourage the early drilling of a lease-earning well, the $2.50/ha annual rental for the rest of the licence term is waived once a well is drilled. The rental is waived for that portion of the licence eligible for lease entitlement according to Schedule B of the Petroleum and Natural Gas Agreements Regulation, even though the lease selection does not have to be made until licence expiry.

To follow through on the example, if the 1 500 m well was drilled in the first year of the licence term, rentals would be waived on the nine sections earned. This would amount to $5 760 a year for the remaining three years of the licence term ($17 280 total).

[5] If the lease-earning well is drilling past the licence expiry date, the licensee is not required to submit his application for lease selection until the finished drilling date of the well. Lease entitlement, however, is calculated on the depth of the well at midnight on the expiry date of the licence.

[6] The Petroleum and Natural Gas Agreements Regulation allows the grouping of two licences,

---

[1] The area described in the agreement.

[2] The maximum area of land stipulated by the ERCB -- considering well drainage, density and other factors -- within which oil and/or gas wells can be drilled or produced. The normal spacing unit for oil is a quarter section; for natural gas, one section.

provided they are within 3.2 km of each other. The provision of licence grouping allows the licensee flexibility in the orderly development of a geological prospect, and makes possible the sharing of lease-entitlement earned by a single well drilled on the location of one of the licences in the group, provided that:

(a) The application is received by the department before drilling of the grouping well begins;

(b) The applicant provides a specific well location and targeted formation on one of the licences to be grouped;

(c) The two licences are 3.2 km or less apart;

(d) The applicant provides geological data demonstrating that the prospect being tested by the grouping well extends over a portion of both licences. The data submitted generally take the form of seismic sections and maps, well petrophysical log cross-sections and

**TABLE**

| Column 1 DEPTH (in Metres) | Column 2 PLAINS AREA (sections) | Column 3 NORTHERN AREA (sections) | Column 4 FOOTHILLS AREA (sections) | Column 5 INCREMENTAL FACTOR (sections per metre) |
|---|---|---|---|---|
| 150 | 3 | 5 | 8 | nil |
| 300 | 3 | 5 | 8 | 0.0033* |
| 600 | 3 | 6 | 9 | 0.0033 |
| 900 | 4 | 7 | 10 | 0.0033 |
| 1200 | 5 | 8 | 11 | 0.0033 |
| 1500 | 6 | 9 | 12 | 0.0033 |
| 1800 | 7 | 10 | 13 | 0.0033 |
| 2100 | 8 | 11 | 14 | 0.0055** |
| 2400 | 9-1/2 | 12-1/2 | 16 | 0.0050** |
| 2700 | 11 | 14 | 18 | 0.0066 |
| 3000 | 13 | 16 | 20 | 0.0066 |
| 3300 | 15 | 18 | 22 | 0.0066 |
| 3600 | 17 | 20 | 24 | 0.0066 |
| 3900 | 19 | 22 | 26 | 0.0066 |
| 4200 | 21 | 24 | 28 | 0.0100 |
| 4500 | 24 | 27 | 31 | 0.0100 |
| 4800 | 27 | 30 | 34 | 0.0100 |
| 5000 | 29- | 32- | 36- | nil |

* As to the Plains area, read "nil" instead of 0.0033

** As to the Foothills area, read "0.0066" instead of 0.0050

- Maximum

**FIG. 9. NUMBER OF SECTIONS THAT MAY BE INCLUDED IN AN APPLICATION FOR LEASE OUT OF A PETROLEUM AND NATURAL GAS LICENCE.**

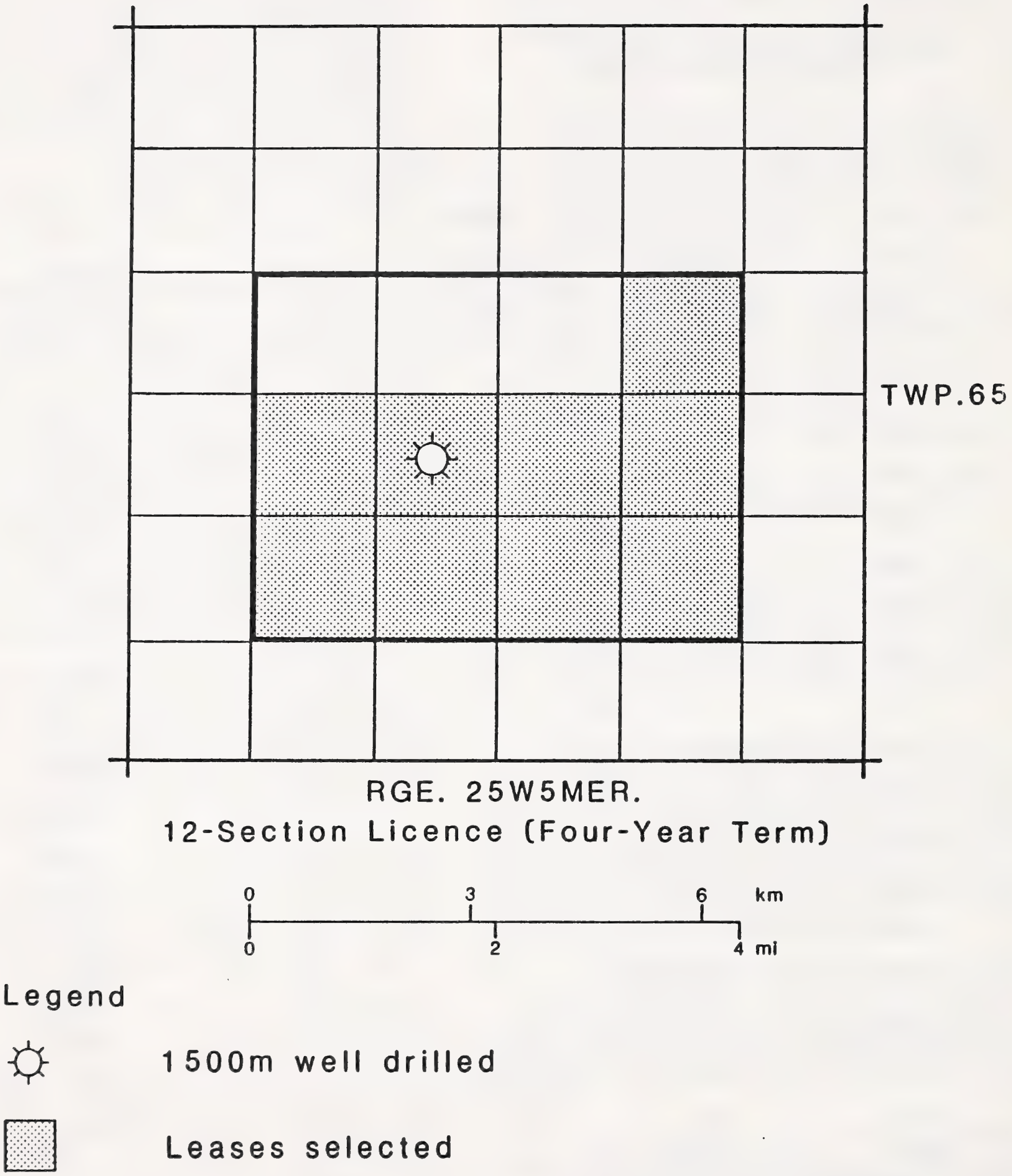


FIG. 10. POTENTIAL LEASE SELECTION IN NORTHERN AREA.

(e) The grouping well must finish drilling before either of the grouped licences reaches their expiry date. A grouping well drilling beyond the expiry of either of the licences involved in the grouping, automatically invalidates the grouping and will qualify for lease entitlement only on the licence on which it was drilled.

### 3.3 Petroleum and Natural Gas Leases

Petroleum and natural gas leases grant the lessee the exclusive right to work, win and recover all petroleum and natural gas within and under the lands and geologic zones described in the lease. The department currently issues five-year petroleum and natural gas leases under legislation that became effective July 1, 1976. An offer for a petroleum and natural gas lease at a public sale must be accompanied by [7] the full amount of the bonus, a fee of $50 and rental at the rate of $2.50/ha for the first year. An offer less than $2.50/ha is not considered.

The department continues to administer the earlier form of 10- and 21-year petroleum and natural gas leases and 21-year natural gas leases.

The initial term of petroleum and natural gas leases issued before June 1, 1962, was 21 years. All petroleum and natural gas leases granted out of petroleum and natural gas permits, reservations and leases purchased at public sales between June 1962 and July 1976 were 10 years. With the introduction of the shorter lease term in 1962, drilling obligations were imposed on 21-year leases to bring their [8] development in line with the new 10-year leases. In 1976, the same type of drilling obligation was imposed on existing 10-year leases to bring them in line with the newest five-year lease. The lessee is obligated to drill a well on his lease or group of leases, or to [9] demonstrate that the lease is productive. In administering the drilling requirement legislation, the department considers only spacing units adjacent to producing wells and unitized leases capable of production. There are no 21-year leases that have not met this drilling requirement. There is no drilling requirement for five-year leases.

A lessee is required to drill a well on his 10-year lease before its seventh anniversary. The drilling requirement can be met by grouping 10-year leases and drilling a well on one of the grouped leases. To be grouped, leases must be located in the same geographic area, that is, the Plains, Northern or Foothills area. A lessee may [10] submit his lease grouping application to the department before spudding his well or within 60 days of the date the well finishes drilling. The number of lease sections that can be grouped is based proportionately on the depth of the well drilled on the lease group. Table 2 outlines the number of sections that can be grouped, depending on the geographic area and the depth of the well drilled. This table is attached as Schedule B of the Petroleum and Natural Gas Lease Regulation.instead of drilling, lessees of 10-year leases have the option of [11] paying drilling extension penalties to have the drilling requirement extended for a year. These penalties are $2.50/ha for the first drilling extension year, $7.50 for the second, $12.50 for the third and $22.50 for the fourth year.

#### 3.3.1 Offset Requirement

[12] When an oil well is drilled on rights not owned by the Alberta Crown (i.e., freehold rights), and the well is put on production, the laterally adjoining offsetting Crown leases are subject to an offset drilling obligation. The reason for the automatic obligation is that the producing freehold well will begin to drain the Crown's reserves from the producing stratigraphic interval. The Crown lessee is required to begin drilling a well within 90 days of a freehold well having been put on production. The lessee may extend this date by paying compensatory royalty or may have the affected zone removed from his lease.

[13] The compensatory royalty rate is calculated on the basis of the volume produced from the offsetting freehold well. This compensatory royalty for the first year is half the normal royalty that would have been payable to the Crown had the non-Alberta Crown well been drilled on the Crown lease. Compensatory royalty is due the first day of the month following expiry of the 90-day period that began when the non-Alberta Crown well went on production. The Crown lessee may elect not to drill the offsetting Crown spacing unit for the second and subsequent years. If the lessee so elects, compensatory royalty is calculated on the basis of 100 per cent of the royalty payable if the non-Alberta Crown well had been drilled on the Crown lease.

The legislation also contains a provision that, when natural gas is produced from a non-Alberta Crown well offsetting the lease, the lessee is advised that the government is concerned that the non-Alberta Crown well is draining reserves from under the lease. He is asked to demonstrate why an offset notice, containing the same options as the automatic oil offset notice, should not be served. The factors considered in the decision include the economics of drilling the specific well, access to gas contracts and pipelines, as well as geologic or engineering evidence that drainage is not occurring. Economic and market conditions are such that to date no notices have been issued

#### 3.3.2 Lease Continuation

Before July 1, 1976, a lease or a portion thereof would retain all rights granted if any zone in the lease was considered productive. A productive well did not necessarily continue the entire lease area, but the spacing unit for the well automatically continued and productivity of remaining lands was evaluated by spacing unit. If any of the lands were determined to be non-productive, they were deleted when the lease expired. An exception to this rule was that one productive oil or gas well on a 21-year lease permitted the granting of a new lease for 10 years regardless of its size. The lease remained in effect for the entire 10-year term even if production ceased.

Once a lease had been continued, its status did not change if it met any of the following criteria:

(a) formed part of the spacing unit for a productive well;

(b) was subject to a unit agreement;

(c) was part of a spacing unit subject to compensatory royalty; and/or

(d) the department considered the lands capable of production.

Lease continuation at that time addressed only the areal extent of the productive pool; hence, a lessee whose lease was continued retained rights to all geological horizons, regardless of which zones were considered productive.

It was recognized in the early 1970s that many leases were being continued solely on the basis of proven productivity from shallow stratigraphic intervals, and that the geological zones below these intervals were not being explored. This resulted in legislative change in 1976 that added a third dimension to lease continuation; the oil and gas rights tenure system entered the fourth major stage of its evolution in 1981.

At lease expiry, a lease would be examined, not only on the basis of the areal extent of productivity, but also vertically to ascertain the deepest stratigraphic interval considered productive or capable of production in paying quantity

The addition of this third dimension meant that all geological zones below the base of the deepest productive zone would revert to the Crown at lease expiry. The reversion of the non-productive and unproven zones would be handled in the same manner as the reversion of non-productive and unproven lands. This is referred to as deeper rights reversion.

Petroleum and natural gas leases with a five-year term, first issued on July 1, 1976, were continued in this three-dimensional manner, the first such continuation occurring in July 1981. To give lessees of 10- and 21-year leases time to explore the rights below existing productive horizons, deeper rights reversion on these leases was delayed until January 1, 1983, or until their term expiry date, whichever occurred later.

Lease continuation for all leases was granted to the base of the deepest productive zone found anywhere on the lease, even if this zone was only partly productive.

On July 1, 1985, however, the legislation was amended to provide for deeper rights reversion on a spacing unit rather than a lease basis.

The lease continuation cycle (Figure 11) depicts the full cycle of lease continuation from initial expiry to cessation of production. [14] The simplest form of lease continuation is where all the lands form part or all of the production spacing unit for a producing well. These lands are automatically continued to the base of the deepest productive stratigraphic interval in that well, as illustrated in Figure 12.

Similarly, where an entire lease is part of a unit agreement, or the lease is subject to compensatory royalty (Section 3.3.2), lease continuation is automatically granted to the base of the deepest productive stratigraphic interval in the unit or, in the case of compensatory royalty, to the base of the producing zone in the well on the offsetting spacing unit.

Lease continuation becomes more complex when the lease does not fall into one of the above categories. In these more complex cases, the lessee or an authorized party must submit technical (geological, geophysical, engineering) data demonstrating productivity. If the [15] department is satisfied that the lease or a portion of the lease is capable of production in paying quantity, continuation is granted for the productive area.

[16] Technical data submitted by a lessee may be inconclusive and a specific stratigraphic interval in a portion of the lease may be considered by the department to be only potentially productive. In this type of situation, the potentially productive lands may be allowed to continue for one year (Figure 13).

The year allows the lessee to undertake further drilling to confirm productivity. This type of continuation requires a performance security deposit of $25/ha, refundable in whole or in part if the lessee drills a well and penetrates the potentially productive interval in the potentially productive portion of the lease. The refund of the deposit is proportional to that part of the continued location evaluated by the drilled well.

At the expiry of the one-year continuation, the productivity of the lease is again reviewed. Based on the new drilling and geological or technical

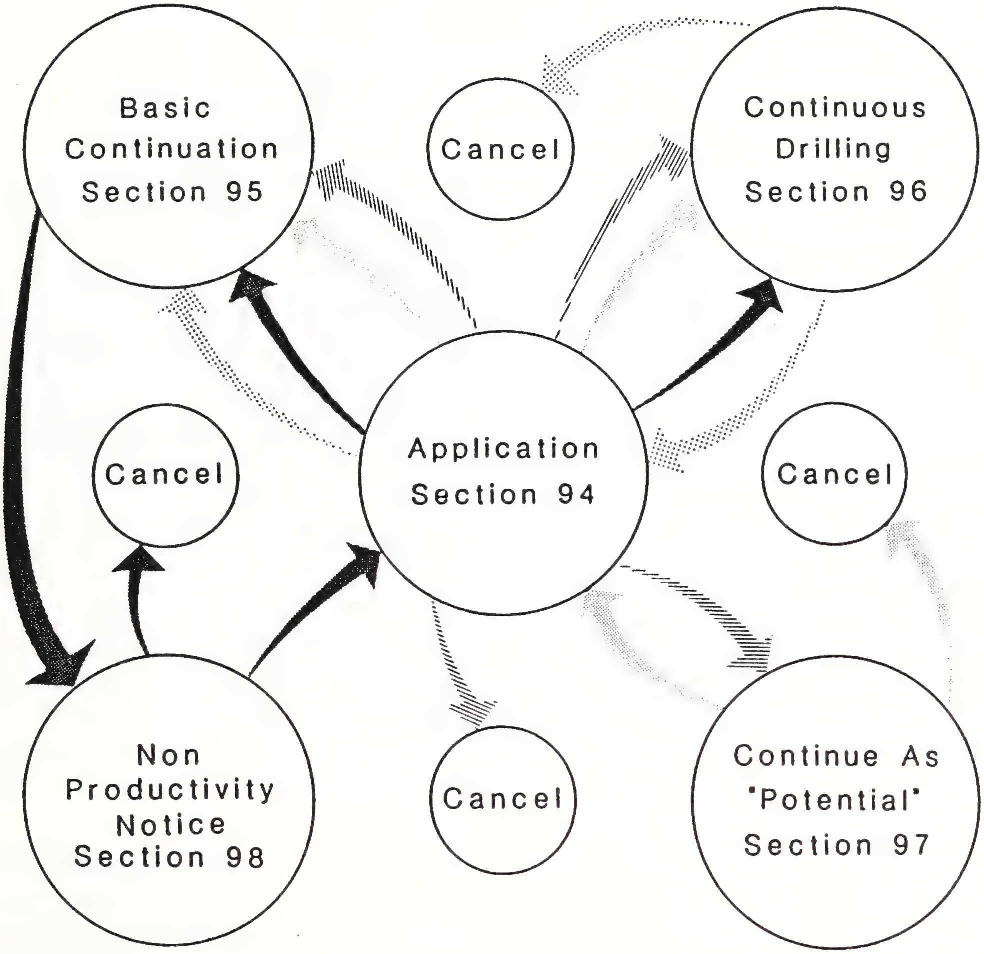

Basic Continuation Section 95
Cancel
Continuous Drilling Section 96
Cancel
Application Section 94
Cancel
Non Productivity Notice Section 98
Cancel
Continue As "Potential" Section 97

FIG. 11. LEASE CONTINUATION CYCLE.

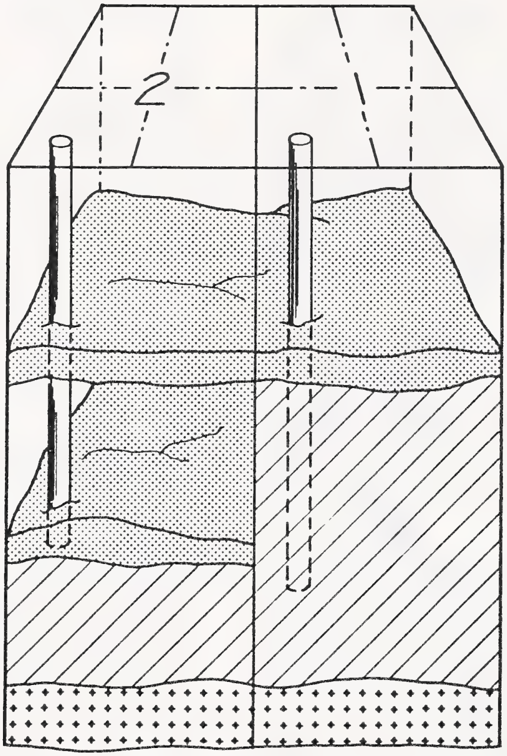
Options available under each section of the Act.

End of Lease Term

Section 96

Section 97

Section 98



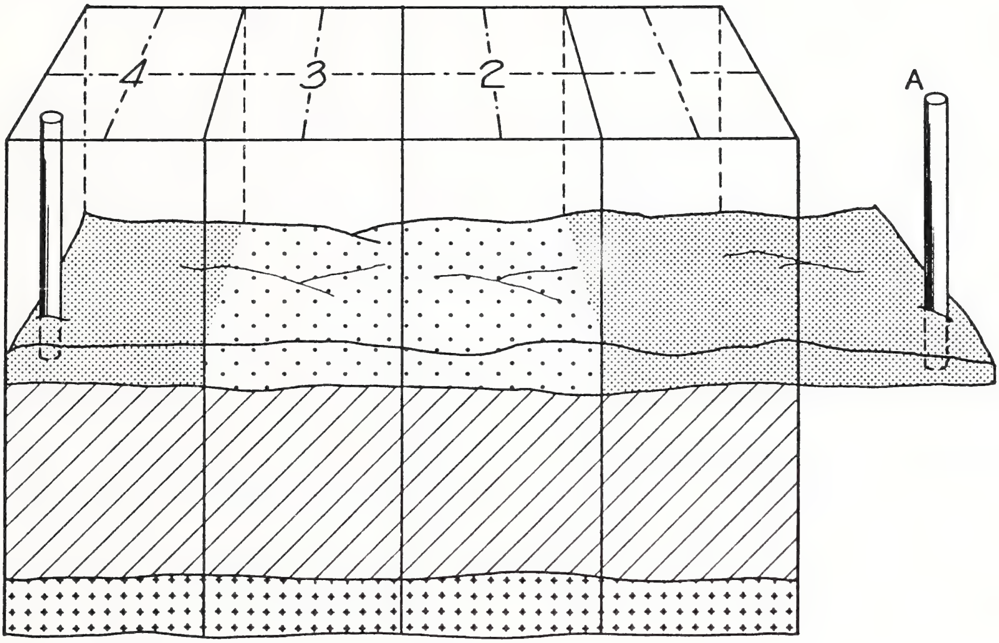
Legend

▨ Reverts to Crown

░ Producing zones

⁘ Basement

FIG. 12. CONTINUATION OF A TWO-SECTION LEASE WITH TWO DIFFERENT PRODUCTIVE ZONES.



Legend

▨ Reverts to the Crown at expiry

▒ Proven productive

░ Potentially productive

⁙ Basement

A Off-lease productive well

FIG. 13. EXPIRING FOUR-SECTION LEASE WITH SHALLOW POTENTIALLY PRODUCTIVE LANDS.

information acquired, the productive area of the lease will be continued to the base of the deepest productive stratigraphic interval. The lease, or a portion, will be cancelled if productivity is not conclusively proven.

Figure 14 illustrates lease continuation following drilling, which proved productivity during the one-year continuation. Figure 15, however, illustrates continuation where drilling does not prove productivity but does prove a shallower zone to be productive. Further reversion of the rights below the base of the shallower zone occurs. Figure 16 illustrates the case where two shallower zones are found productive.

[17] When a well is drilling past the expiry date of a lease, or has finished drilling within 90 days of expiry, the section on which the well is located will continue for 90 days from the finished drilling date. This allows the lessee to evaluate the drilling results and prepare the information necessary to demonstrate productivity of the lease area. In the event that a second well is spudded within that 90-day period, the continued portion of the lease continues for an additional 90 days from the finished drilling date of the second well. This procedure carries on for as long as a new well is spudded in the 90 days following the finished drilling date of the previous well. Upon expiry of the 90-day period following the last well drilled, if the drilling and testing results prove the spacing units productive, they continue under the normal continuation criteria. Upon application, and with prior approval of the department, land outside the spacing unit that will be evaluated by the first well may also continue under the same conditions and for the same 90-day periods (Figure 17).

While every effort has been made to write the lease continuation legislation as clearly and simply as possible, complexity stems from three sources. first, the reservoir(s) itself can be only imperfectly understood from wells drilled on typical spacing patterns. Second, the principle of having the lessee demonstrate vertical and lateral productivity to the satisfaction of the department, by whatever means he may, is preferable to a rigid approach whereby a well secures only its spacing unit.

Third, it makes more sense to allow a lessee who is committed to a continuous drilling program to do so rather than terminate the lease(s) upon expiry.

### 3.3.3 Continued Leases

[18] When any land or zone within a continued lease is no longer considered productive, a notice is sent to the lessee advising that he has one year to prove the area productive. The most obvious cessation of productivity is when a well on the lease, or in the immediate vicinity of the lease, is abandoned. This notice covers a specific stratigraphic interval and the specific spacing units which the lessee must demonstrate to be productive. If the lessee is unable to demonstrate the productivity of the stratigraphic interval and the spacing units described in the notice, the portion subject to the notice is deleted from the lease at the expiry of the one-year period. Figure 18 illustrates a situation where the Crown would require the lessee to demonstrate that the lease remains productive. Figure 19 illustrates the case when a zone is no longer considered productive and would be the subject of a notice.

Demonstrating the productivity of a stratigraphic interval, subject to a notice, generally necessitates drilling a well. If a well is not drilled, the lessee must provide conclusive technical data from offsetting wells to prove the lease productive from the stratigraphic interval addressed in the notice.

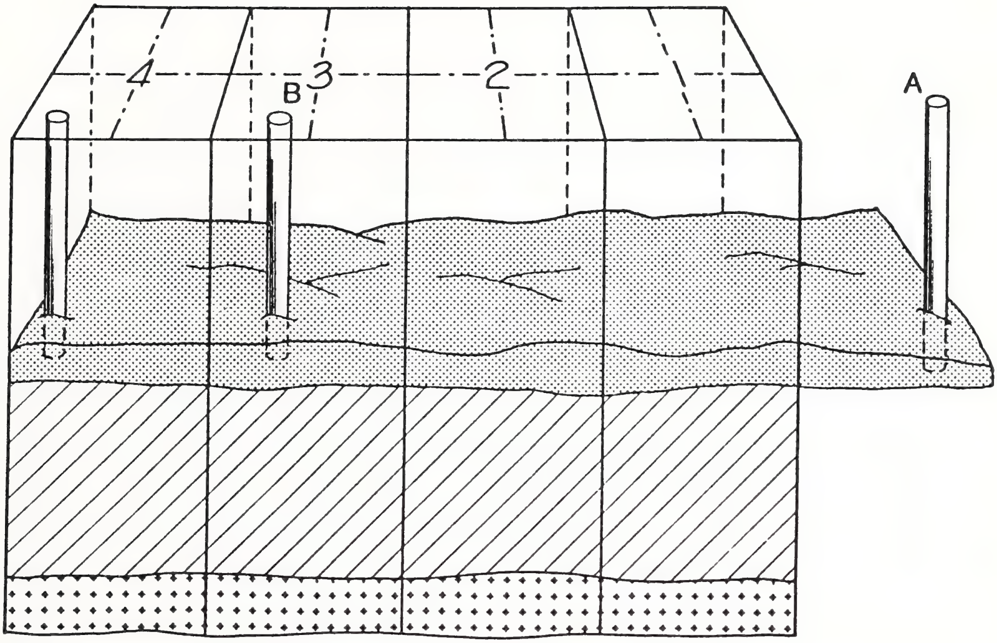
### 3.3.4 Unitization

Parties with an interest in a petroleum and/or natural gas pool or reservoir may join together the leases as a unit area to produce the reservoir contents without regard to the lease boundaries. The unit area is operated as though all royalty owners were a single lessor and all working-interest owners were a single lessee. Unitization has become an important tool to achieve the best reservoir recovery and to reduce operating costs.

Unitization is particularly suitable in areas where enhanced recovery or pressure maintenance schemes have become necessary for a reservoir's efficient production. By allowing expenses and revenues to be shared, unitization is the most equitable method of operation, provided that the entire pool or an appropriate portion of a pool is included in the unit and all the owners reach agreement.

Once all the working-interest owners have agreed to form a unit, one of the interest holders is designated as the unit operator. His task is to negotiate the allocation of each participant's unit equity. The method used to determine each owner's share of the unitized pool is the assignment of a value to each lease or portion of a lease within the unit boundary; this value is called the tract participation factor. To determine a tract participation factor, certain technical parameters of the pool must be established. These may include:

(1) estimated recoverable reserves
(2) productive pore volume
(3) initial oil and/or gas in place
(4) productive capacity
(5) areal extent
(6) present worth of each tract
(7) cumulative production



Legend

▨ Reverted to the Crown at end of initial term

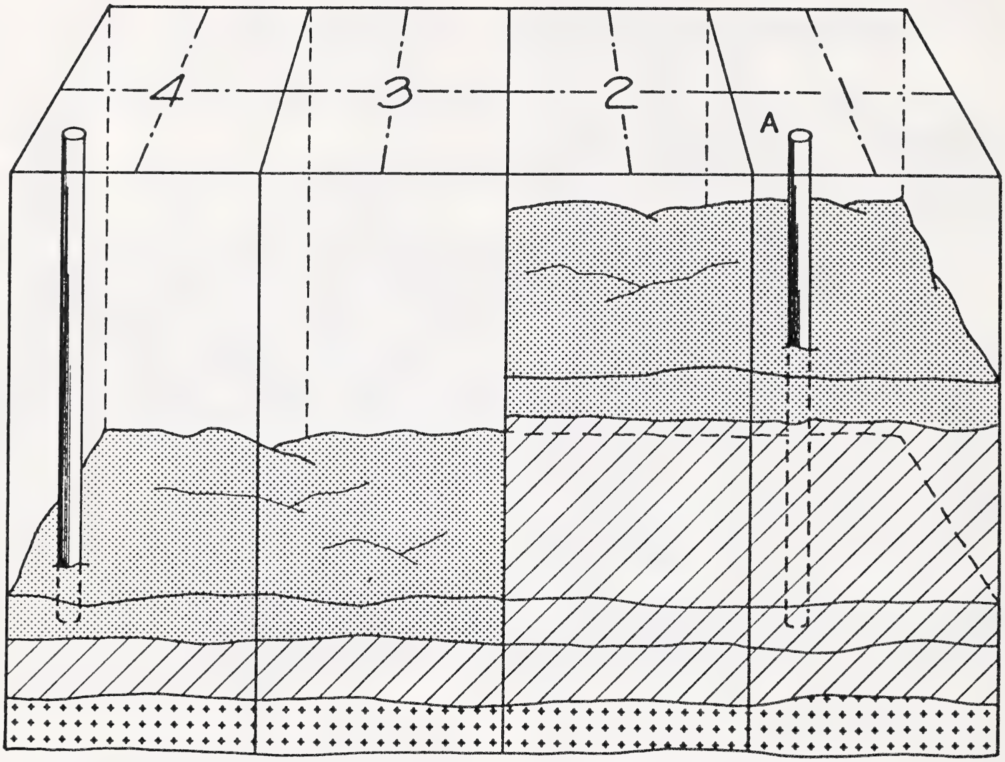
░ Proven productive

⁘ Basement

A Off-lease productive well

B Well drilled during one-year continuation period

FIG. 14. LEASE REVIEW FOLLOWING ONE-YEAR CONTINUATION PERIOD.



Legend

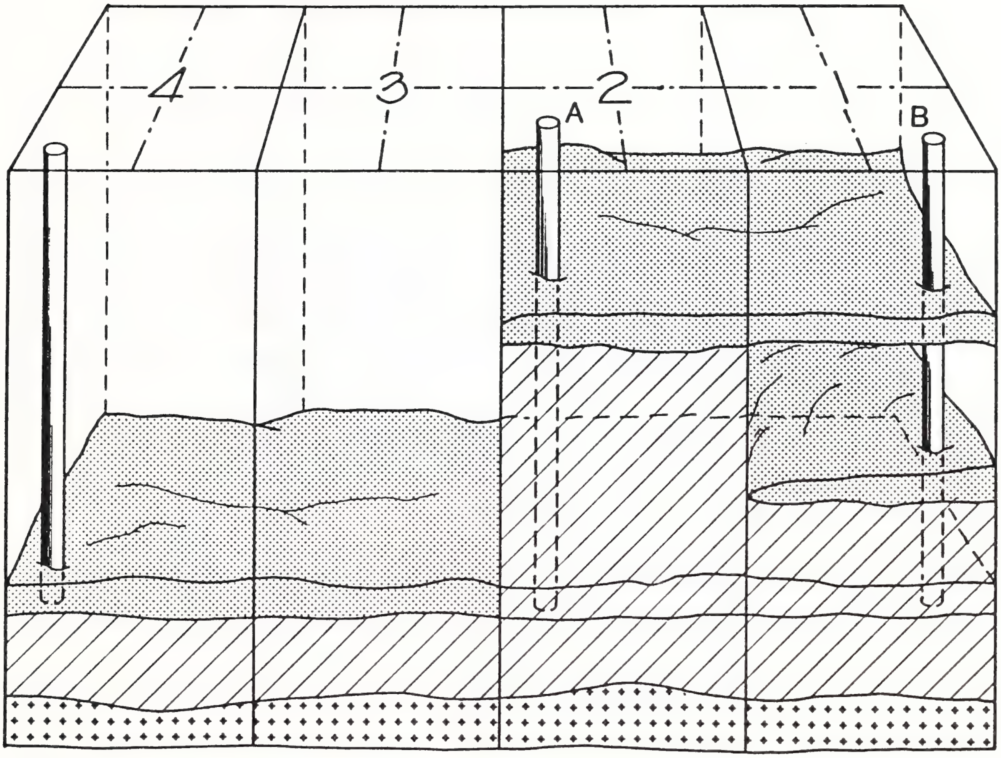
▨ Reverts to the Crown at expiration of one-year continuation period; proven unproductive

░ Proven productive

⁘ Basement

A Productive well drilled and completed in a shallower zone during one-year continuation period

FIG. 15. LEASE REVIEW FOLLOWING ONE-YEAR CONTINUATION PERIOD (ONE WELL DRILLED).



Legend

▨ Reverts to the Crown at expiration of one-year continuation period; proven unproductive

░ Proven productive

⁜ Basement

A&B Two productive wells drilled and completed in shallower zones during one-year continuation period

FIG. 16. LEASE REVIEW FOLLOWING ONE-YEAR CONTINUATION PERIOD (TWO WELLS DRILLED).

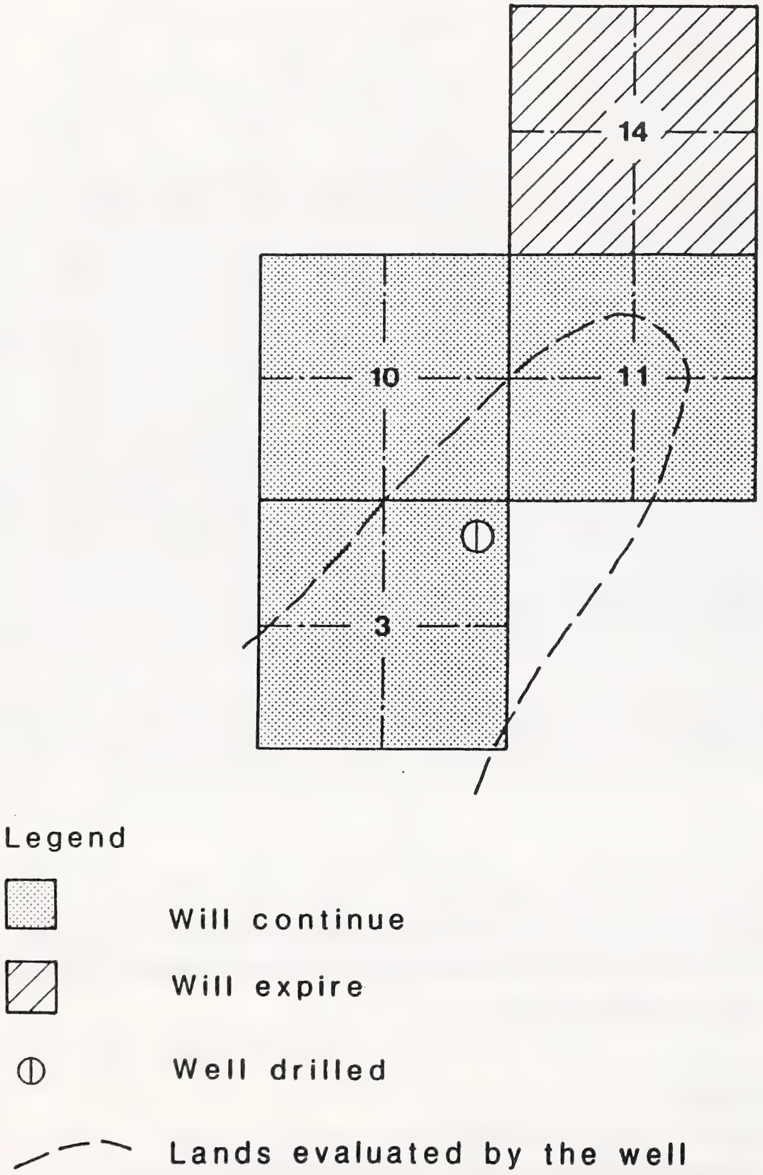
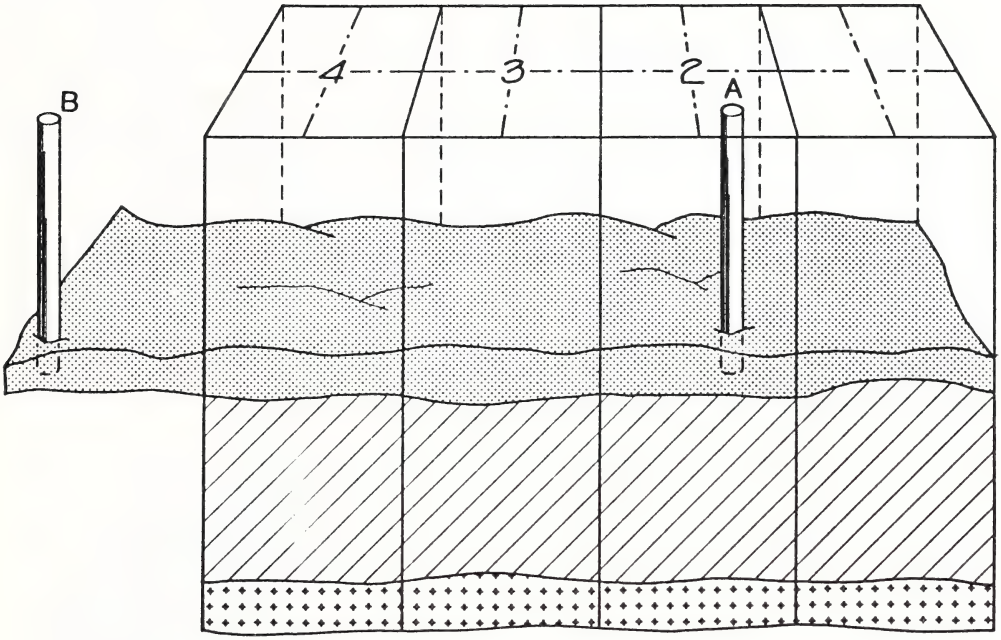


FIG. 17. CONTINUATION DURING THE DRILLING OF WELLS.

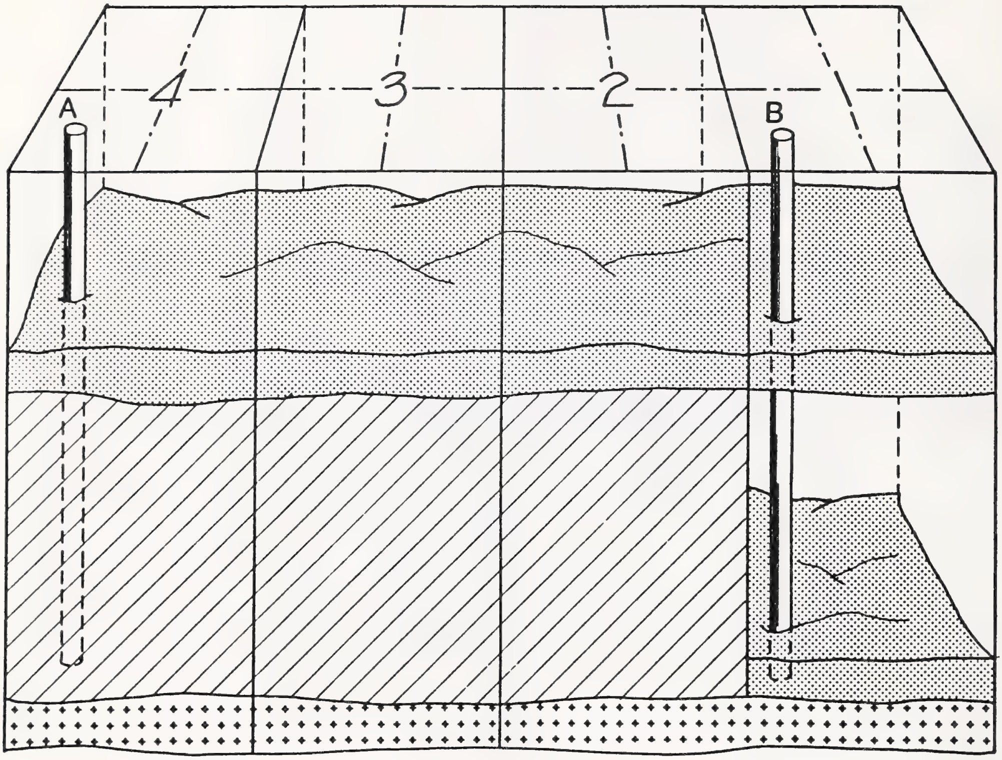
If application is made before expiry, the lands being evaluated by the well will continue as to all rights; the balance will expire.



Legend

| | |
|---|---|
| ▨ | Reverted to the Crown at the end of initial term |
| ⁘ | Basement |
| A | Well abandoned on lease |
| B | Off-lease productive well |

FIG. 18. ENTIRE LEASE SUBJECT TO ONE YEAR NON-PRODUCTIVITY NOTICE.



Legend

| | |
|---|---|
| ▨ | Subject to notice to drill (one year) Zone abandoned |
| ░ | Basement |
| A | On-lease productive well - lower zone abandoned |
| B | On-lease productive well (2 zones) |

FIG. 19. LEASE SUBJECT TO ONE-YEAR NON-PRODUCTIVITY NOTICE.

(8) production decline curves
(9) permeability

The department becomes involved only in those units where the Crown owns oil and gas rights within the unit area. Each proposed unit agreement is reviewed to ensure the inclusion of appropriate lands and the fairness of their tract participation factors.

Once the Crown signs the unit agreement, special provisions in the Mines and Minerals Act govern Crown leases within the unit. The unit operator is responsible for field operations, including drilling, producing and maintenance. Each working-interest owner contributes to the unit costs in proportion to his ownership and receives his entitled share of production, whether or not there is a well physically located on his lease. In line with good conservation, there is no need to drill a well in every spacing unit or on each lease within the unit boundary; only those wells considered essential for efficient production of the unitized pool are drilled and operated.

The actual unit operations, production and well operations are governed by the Energy Resources Conservation Board (ERCB) pursuant to the Oil and Gas Conservation Act.

## 4. ROLE OF THE ENERGY RESOURCES CONSERVATION BOARD (ERCB) IN OIL AND GAS MANAGEMENT

While petroleum and natural gas leases and licences grant the right to win, work and recover oil and gas, the actual operations relating to drilling and production, on both Crown and freehold minerals, are regulated by the ERCB.

The Board issues licences to drill wells, as well as determining the spacing of wells being drilled into individual reservoirs to ensure efficient drainage of the resource, regulating production rates and possibly requiring the enhanced recovery of oil. In addition, the Board determines the safety procedures necessary for the drilling of wells. Environmental aspects regulated by the Board include routine well-site operations, such as for the containment and disposal of drilling fluids, and for the special measures necessary when drilling into formations with high concentrations of hydrogen sulphide.

Public hearings are frequently held to resolve equity issues between operators and where energy developments have the potential to affect the public at large.

The ERCB requires the submission of well information from operators and makes it available to the public (after holding it confidential for one year after drilling in the case of exploratory wells.) This information includes daily drilling, testing and completion records; drill cores and cuttings; fluid analyses, flow rates and pressures; petrophysical logs and monthly production quantities. The latter are forwarded to the Mineral Revenues Division, Department of Energy, for royalty verification purposes. The Board also compiles and publishes aggregated information such as reservoir characteristics performance and remaining reserves. This is available from the ERCB Information Services, 640 - 5th Avenue S.W., Calgary, Alberta, T2P 3G4, Telephone: 297-8190.

As a matter of interest, the submission of geophysical data is not required, although, as mentioned earlier, lessees may choose to do so in support of lease continuation submissions to the Mineral Resources Division, or to the ERCB for other purposes. Geophysical data are, however, frequently sold or traded between companies.

## 5. REFERENCES TO EFFECTIVE LEGISLATION AS OF 1987

Citation

[1] Mines and Minerals Act, Chapter M-15, S.A. 1985, C.39 (referred to hereafter as Mines and Minerals Act), section 16

[2] Petroleum and Natural Gas Agreements Regulation, A.R. 253/85, section 5

[3] Petroleum and Natural Gas Agreements Regulation, sections 3 and 4

[4] Petroleum and Natural Gas Agreements Regulation, section 11

[5] Petroleum and Natural Gas Agreements Regulation, section 7

[6] Petroleum and Natural Gas Agreements Regulation, section 10

[7] Petroleum and Natural Gas Agreements Regulation, section 14

[8] Petroleum and Natural Gas Agreements Regulation, section 15

[9] Petroleum and Natural Gas Agreements Regulation, section 17

[10] Petroleum and Natural Gas Agreements Regulation, section 18

[11] Petroleum and Natural Gas Agreements Regulation, section 16

[12] Petroleum and Natural Gas Agreements Regulation, section 21

[13] Petroleum and Natural Gas Agreements Regulation, section 22

[14] Mines and Minerals Act, Part 5, section 95

[15] Petroleum and Natural Gas Agreements Regulation, section 23

[16] Mines and Minerals Act, Part 5, section 97

[17] Mines and Minerals Act, Part 5, section 96

[18] Mines and Minerals Act, Part 5, section 98

[19] Mines and Minerals Act, Part 9

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